

**METHODS FOR MANUFACTURING RETICLES FOR CHARGED-  
PARTICLE-BEAM MICROLITHOGRAPHY EXHIBITING REDUCED  
PROXIMITY EFFECTS, AND RETICLES PRODUCED USING SAME**

5

**Abstract of the Disclosure**

Methods are disclosed for producing reticles for use in charged-particle-beam microlithography. In an exemplary method, a pattern to be formed on a sensitive substrate is designed. For at least certain of the pattern elements, local resizing is determined as appropriate for correcting proximity effects.

- 10 Corresponding "initial value" reticle-pattern data is then produced. During drawing of the reticle pattern on a reticle substrate using an electron beam, the beam dose is varied so as to change linewidths of the pattern elements from their respective initial value data. Drawn linewidths also can be changed for pattern elements during drawing. The reticle that is produced exhibits better correction of proximity effects
- 15 when the pattern is transferred to the sensitive substrate.